GOVERNMENT OF THE DISTRICT OF COLUMBIA

District Department of the Environment

CHAPTER 2 OPERATION PERMIT MEMORANDUM

TO: File

THROUGH: Stephen S. Ours, P.E. SSO
Chief, Permitting Branch

FROM: Abraham T. Hagos ATH
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SUBJECT: Architect of the Capitol
Permit to Construct Two Combustion Turbines and Associated Two Heat Recovery Steam Generating Units with Duct Burners

DATE: November 15, 2012

BACKGROUND INFORMATION

A permit application from the Architect of the Capitol (AOC) to construct a cogeneration system that includes two 7.5 MW each combustion turbines and associated two 71.9 MMBtu/hr heat recovery steam generating (HRSG) units with duct burners to generate both electricity and heat for steam at the Capitol Power Plant (CPP) facility, located at 25 E Street, SE was received by the Air Quality Division (AQD) on February 10, 2012. Additional supplemental information dated March 14, 2012 and March 28, 2012 was also received by AQD.

AQD intends to issue two separate permits (6663-C and 6664-C), one for each combustion turbine with the associated HRSG unit, but will issue them in a common permit document.

The permit action will be published in the DC Register on November 16, 2012. Public comments for the permit action will be solicited through December 17, 2012. A public hearing will be held on December 17, 2012.

AOC has not requested that any of the materials submitted with this application be held confidential.

REGULATORY REVIEW

Chapter 2, Section 200: General Permit Requirements:
The CPP facility is an air pollution source for criteria and other air pollutants. The applicant is requesting a permit to construct fuel burning equipment greater than 5 MMBTU/hr heat input. Thus a Chapter 2 permit is required. The proposed permit addresses all requirements of Chapter 2. This pair of Chapter 2 permits will be issued in conjunction with a permit containing plantwide applicability limits (PALs) for NO_x and $PM_{2.5}$ which will result in an allowable increase in emissions from baseline actual emissions, but will effectively cap emissions of the facility well below previous potential emissions.

20 DCMR Chapter 3: Operating Permits and Acid Rain Programs:
The CPP facility is a major source subject to Chapter 3, and will therefore need an operating permit in accordance with 20 DCMR 300.1 for the new sources upon completion of construction the cogeneration. The proposed permits require the applicant to apply for a Chapter 3 permit amendment to include the requirements of these permits in the Chapter 3 permit within 12 months of the issuance of a permit to operate the equipment covered by these permits. This requirement is contained in Condition I(j).

Note that the acid rain provisions of this regulation are not applicable to the facility.

20 DCMR Chapter 5: Source Monitoring and Testing Requirements:
Chapter 5 authority was used to ensure that all appropriate monitoring and testing will be performed so as to ensure compliance with the emission and operational requirements of the permit and applicable regulations. Among other requirements related to this regulation, the permittee will be required to perform stack testing to determine compliance with emission limits, maintain written records of fuel usage and emissions from the equipment, and maintain records of other monitored data. These requirements have been established throughout the permit document, but especially in Conditions IV and V.

Chapter 6, Section 606: Visible Emissions
The visible emissions limitations of 20 DCMR 606.1 are applicable to these fuel burning units. Visible emissions shall not be emitted into the outdoor atmosphere from the operation of these units; provided, that discharges not exceeding forty percent (40%) opacity (unaveraged) shall be permitted for two minutes in any sixty (60) minute period and for an aggregate of twelve(12) minutes in any twenty-four hour (24 hr.) period during start-up, or malfunction of equipment. This requirement is contained in Condition II(h) of the proposed permit document. Related testing requirements are contained in Conditions IV(i) and (j) of the proposed permit document.

Chapter 9, Section 903: Odorous or Other Nuisance Air Pollutants
"An emission into the atmosphere of odorous or other air pollutants from any source in any quantity and of any characteristic, and duration which is, or is likely to be injurious to the public health or welfare, or which interferes with the reasonable enjoyment of life or property is prohibited [20 DCMR 903.1]" is applicable to all sources. This requirement is contained in Condition II(i) of the permit.

40 CFR Part 60, Subpart Dc: Standard of Performance for Small Industrial, Commercial, Institutional Steam Generating Units
Per 40 CFR 60.4305(b), HRSGs and duct burners regulated under 40 CFR 60 Subpart KKKK are exempted from the requirements of subparts Da, Db, and Dc of this part. Therefore, the HRSGs and the duct burners to be installed as part of the cogeneration project are not subject to NSPS Subpart Dc since they are regulated under NSPS Subpart KKKK. The combustion turbines themselves are not considered boilers, and are therefore also not regulated by this subpart.

40 CFR Part 60, Subpart GG - Standards of Performance for Stationary Gas Turbines
Per 40 CFR 60.4305(b), stationary combustion turbines regulated under 40 CFR Subpart KKKK are exempt from the requirements of subpart GG. Because the combustion turbines to be installed as part of the cogeneration project are subject to NSPS Subpart KKKK, they are therefore not subject to NSPS Subpart GG.

40 CFR Part 60, Subpart KKKK- Standards of Performance for Stationary Combustion Turbine Units
The cogeneration project includes two combustion turbines that have a heat input greater than 10 MMBTUs per hour and will be constructed after February 18, 2005. As such, the combustion turbines and their associated HRSGs will be subject to the requirements of NSPS Subpart KKKK. Subpart KKKK establishes nitrogen oxides (NO_x) and sulfur dioxide (SO_2) emission limits for combustion turbines that commenced construction after February 18, 2005 and have a heat input at peak load equal to or greater than 10 MMBTUs per hour. This subpart also applies to emissions from any associated HRSG units and duct burners. Conditions II(a) through (d) of the proposed permits contain the emission limits of this regulation. Additionally, all applicable monitoring, testing, record keeping, and reporting requirements of this regulation have been included in the relevant sections of the proposed permits.

40 CFR Part 63- National Emission Standards for Hazardous Air Pollutants (NESHAP)
A major source of hazardous air pollutants (HAPs) is a source having potential emissions in excess of 25 tons per year of total HAPs and/or potential emissions in excess of 10 tons per year of any individual HAP. Currently, CPP is a major source of HAP for hydrogen chloride (HCl), primarily due to the coal use at the facility. However, CPP expects to become an area source of HAPs after the project is implemented because they

will be able to rely on the cleaner and more efficient combustion turbines for more of their steam output and rely less on Boilers 1 and 2 which burn coal. As such, AOC is requesting that the District Department of the Environment (DDOE) include such provisions in the permit for cogeneration. DDOE has included these provisions that limit the facility-wide HAPs emissions at the CPP to be below the major source threshold limits of HAPs. These requirements are contain in Condition II(e) and (f) of the permit. Condition II(g) clarifies the process for which those conditions will go into effect, since the facility will still need to rely on the older units during the combustion turbine construction process.

Conditions IV(l) and V(c) require monitoring and record keeping of HAP emissions to document compliance with those emission limits to ensure that the facility's emissions consistently remain below the HAP major source thresholds. Condition VI(f) requires reporting of any exceedances of those limits.

NESHAP Subpart DDDDD – National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers and Process Heaters
This maximum achievable control technology (MACT) standard applies to industrial, commercial, and institutional boilers and process heater at major sources of HAPs. CPP will not be subject to the requirements of this standard as long as they comply with Conditions II(e), (f), and (g) of the proposed permits.

NESHAP Subpart JJJJJJ – National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers Area Sources
This standard covers area sources (non-major sources) of hazardous air pollutants. However, Subpart JJJJJJ clarifies that waste heat boilers are not included in the definition of boiler and, therefore, the HRSGs are not subject to this area source boiler standard. The combustion turbines, themselves, are not considered boilers, and are therefore also not covered.

NESHAP Subpart YYYY – Stationary Combustion Turbines
NESHAP Subpart YYYY establishes formaldehyde emission limits for combustion turbines that commenced construction or reconstruction after January 14, 2003 at major sources of HAPs. CPP will be a minor source of HAPs as discussed previously, and therefore, will not be subject to Subpart YYYY.

RECOMMENDATIONS

The proposed project and attached permit comply with all applicable federal and District air pollution control laws and regulations.

Public comments for the permit action will be solicited from November 16 through December 17, 2012. AQD will address any comments received before issuing final permits. If no comments are received, I recommend that the proposed permits (#6663-C and 6664-C) be issued in accordance with 20 DCMR 200.1.